REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 1-26 are in the case.

I. ELECTION/RESTRICTION

The election of Group I and composition species E are hereby affirmed. Withdrawn claims are indicated as such in the present amendment.

II. SPECIFICATION

The specification has been amended to include a cross-reference to the underlying PCT international application. For completeness, the Examiner's attention is drawn to Serial No. 10/239,138, filed on December 12, 2002.

The specification has also been amended to include customary headings, including a brief description of the drawings. No new matter is entered.

III. THE 35 U.S.C. §112, SECOND PARAGRAPH, REJECTION

Claims 1, 3, 12, 15 and 17 stand rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite. In response, the claims have been amended to meet the Examiner's objections. In regard to claim 17, the term "electroylser" is the correct term. This is an apparatus in which an electrolysis reaction may be undertaken.

Withdrawal of the outstanding 35 U.S.C. §112, second paragraph, rejection is now believed to be in order. Such action is respectfully requested.

IV. THE OBVIOUSNESS REJECTION

Claims 1, 3, 12, 15 and 17 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over EP 0932213 in view of JP 06-029032. That rejection is respectfully traversed.

The invention as claimed is directed to a composite membrane comprising a conductive polymer and is support material for the polymer. The polymer has a moiety of formula I and/or II and/or III, wherein at least some of the units I, II and/or III are functionalized to provide ion exchange sites; wherein the phenyl moieties in units I, II, and III are independently optionally substituted and optionally cross-linked; wherein m, r, s, t, v, w and z independently represent zero or a positive integer, E and E' independently represent an oxygen or a sulphur atom or a direct link, G represents an oxygen or sulphur atom, a direct link or a -O-Ph-O- moiety where Ph represents a phenyl group and Ar is selected from one of the moieties (i) * and (i) to (x) which is bonded via one or more of its phenyl moieties to adjacent moieties, as set forth in claim 1, and wherein the conductive polymer includes at least some ketone moieties in the polymeric chain.

Basis for the amendment specifying that the conductive polymer includes at least some ketone moieties in the polymeric chain appears at page 12, beginning at line 6. This subject matter is encompassed by the elected species E. Claim 5 has been cancelled without prejudice. No new matter is entered.

EP 0932213 describes polymers which comprise phenyl, sulphone and ether units. There is no disclosure of the inclusion in the polymers of any ketone units. As a result, the polymers described cannot be crystalline or crystallisable. This is because,

in polyaryletherketones/sulphones, it is the ketone units which are responsible for any crystallinity. Polymers which do not include any ketone units but only include sulphone units, cannot be crystalline or crystallisable.

A translation of JP 06-029032 is attached to this response. It should be noted in paragraph [0004] that the problem to be overcome related to conventional polymer electrolyte films which use woven cloth or the like as a reinforcing material. Such arrangements are said to be disadvantageous in that separation occurs at the interface between the woven cloth fibres and the ion-exchange resin, with the result that "the ion-exchange resin drops out and holes open up on the polymer electrolyte film". Paragraph [0005] explains why this is believed to happen and it is stated that it is due to the ion-exchange resin swelling and shrinking as its water content varies. According to paragraph [0006] of JP'032, the problem described is overcome by changing the nature of the support material. In particular, a polymer porous film is prepared by drawing at least uni-axially (paragraph [0007]) at a temperature no greater than the crystal melting point (of the film).

Thus, JP '032 solves a problem associated with the swelling of ion-exchange resins by changing the nature of the support material. In contrast, in accordance with the present invention, the nature of the conductive polymer is changed. In particular, by defining a conductive polymer which includes at least some ketone units, such a polymer may be crystalline or crystallisable. Crystalline/crystallisable polymers are not as deformable as corresponding polymers which are not crystallisable/crystalline and, furthermore, such crystalline/crystallisable polymers do not absorb as much water as corresponding polymers which are not crystallisable/crystalline. As a consequence, the

swelling/shrinking described in paragraph [0005] of JP '032 is reduced in a corresponding crystalline/crystallisable ketone containing conductive polymer and, accordingly, the problem is not as acute.

A conductive polymer having crystallinity may be regarded as having an internal cross-link, which results from crystallinity and it is this which restricts swelling/shrinking. Thus, whereas JP '032 solves the problem by varying the nature of the support material, the inventors of the present invention address the problem in an alternative manner. The solution to the problem as claimed in claim 1 is not suggested by the disclosure in the documents cited by the Examiner.

Based on the above, it is clear that one of ordinary skill in the art would not have been motivated to arrive at the presently claimed invention based on the combined disclosures relied on by the Examiner. Absent any such motivation, a *prima facie* case of obviousness has not been generated in this case. Reconsideration and withdrawal of the outstanding obviousness rejection are accordingly respectfully requested.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____
Leonard C. Mitchard
Reg. No. 29,009

LCM:lfm
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100
Attachment: English language translation of JP 06-029032